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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

ZOLLINGER, NATHAN C

ART UNIT

PAPER NUMBER

3746

MAIL DATE

DELIVERY MODE

04/21/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,748	Applicant(s) OHMI, TADAHIRO	
	Examiner NATHAN ZOLLINGER	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8/17/2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Response to Amendment

The amendment filed on January 15, 2010 has been entered. Claims 1, 4-7, 9-10, and 12 have been amended. Claim 14 has been cancelled. In light of these and other changes, Examiner also withdraws all previous objections.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the apparatus in dependent claim 6 in which the gas recovery compressor is connected to a discharge port of a vacuum pump at a stage prior to the last stage without divergence must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

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of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites the limitation "the last stage vacuum pump." There is insufficient antecedent basis for this limitation in the claim. In claim 6, Applicant uses the word "omitted" in the claim to refer to the idea that the last-stage vacuum pump is not use. Examiner is unsure whether this omission is due to a physical removal of the pump or via a bypass line. Moreover, if the connection is via a bypass line, Examiner is further unsure how the subsequent limitation of "without divergence" would be possible, since the recovery compressor would necessarily be connected to divergent lines. Also in claim 6, Applicant recites "said vacuum pump." Examiner is unsure to which vacuum pump this limitation applies.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Gebele (US 5,228,838).

Claim 1: In Figure 1, Gebele discloses a vacuum apparatus comprising a vacuum container (5) having a gas inlet (2) and a gas outlet (line to 23); a high vacuum pump (12) connected to said gas outlet of said vacuum container, wherein said high vacuum pump is configured to operate in a molecular flow region and depressurize the inside of said vacuum container or maintain the inside of said vacuum container in a depressurized state; a vacuum pump (9) of at least one stage connected to a gas outlet of said high vacuum pump; and a compressor (11) connected to a discharge port of the last-stage vacuum pump of said at least one-stage vacuum pump without divergence. Applicant also claims that the compressor has the capability of depressurizing. It has been held that the recitation that an element is “capable of” performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

Claim 10: In Figure 1, Gebele discloses a vacuum apparatus comprising a container (5) to be depressurized having a gas inlet (2) and a gas outlet (line to 23) and

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introduced with a gas in a supply amount smaller than a predetermined amount; a first vacuum pump (12) configured to operate in a molecular flow region and maintain for maintaining the inside of said container to be depressurized; a second vacuum pump (9) connected at a subsequent stage of said first vacuum pump; and a compressor (11) connected to said second vacuum pump without divergence, wherein the compressor is configured to aspirate all of gases from the second vacuum pump.

Claims 1-3, 10-11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Akutsu (JP2002039061A).

Claim 1: Akutsu discloses a vacuum apparatus comprising a vacuum container having a gas inlet and a gas outlet (Drawing 4); a high vacuum pump (16a) connected to said gas outlet of said vacuum container, wherein said high vacuum pump is configured to operate in a molecular flow region and depressurize the inside of said vacuum container or maintain the inside of said vacuum container in a depressurized state; a vacuum pump (7) of at least one stage connected to a gas outlet of said high vacuum pump; and a compressor (19) connected to a discharge port of the last-stage vacuum pump of said at least one-stage vacuum pump without divergence. Applicant also claims that the compressor has the capability of depressurizing. It has been held that the recitation that an element is “capable of” performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.

Claims 2-3: Akutsu also discloses a vacuum apparatus wherein the number of vacuum pump stages is set to the plurality of stages (Drawing 4).

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Claim 10: Akutsu discloses a vacuum apparatus comprising a container to be depressurized having a gas inlet and a gas outlet (Drawing 4) and introduced with a gas in a supply amount smaller than a predetermined amount (Examiner notes that such an event occurs at the immediate start of the introduction of gas into the container); a first vacuum pump (16a) configured to operate in a molecular flow region and maintain for maintaining the inside of said container to be depressurized; a second vacuum pump (7) connected at a subsequent stage of said first vacuum pump; and a compressor (19) connected to said second vacuum pump without divergence, wherein the compressor is configured to aspirate all of gases from the second vacuum pump.

Claim 11: Akutsu also discloses a vacuum apparatus wherein said first vacuum pump is a turbomolecular pump (paragraph 9) or a thread groove pump, and said second vacuum pump is a booster pump (paragraph 33).

Claim 13: Akutsu also discloses a vacuum apparatus wherein the vacuum pump connected to said compressor is a screw pump (paragraph 9).

Claims 7-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Conrad (US 7,033,142).

Claim 7: Conrad discloses a vacuum apparatus comprising a container (2) to be depressurized having a gas inlet and a gas outlet; a first vacuum pump (3 or 4) configured to operate in a molecular flow region and maintain for maintaining the inside of said container to be depressurized; a second vacuum pump (6) connected at a subsequent stage of said first vacuum pump; a third vacuum pump (8) connected at a subsequent stage of said second vacuum pump; and a compressor (9) connected to

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said third vacuum pump without divergence, wherein the compressor is configured to aspirate all of gases from the third vacuum pump.

Claim 8: Conrad further discloses a vacuum apparatus wherein said first vacuum pump is a turbomolecular pump (col. 1, lines 11-13) or a thread groove pump, and said second vacuum pump is a booster pump (col. 2, lines 63-65), said third vacuum pump being a dry pump (col. 1, lines 15-20).

Claims 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Smith (US 5,925,167).

Claim 5: Smith discloses a vacuum apparatus comprising a vacuum container to be depressurized having a gas inlet and a gas outlet (Fig. 2, 10-13); a high vacuum pump (14-17) connected to said gas outlet of said vacuum container, wherein said high vacuum pump is configured to operate in a molecular flow region and depressurize the inside of said vacuum container or maintain the inside of said vacuum container in a depressurized state; vacuum pumps of a plurality of stages (18-21) connected to said high vacuum pump; and a gas recovery apparatus (27-28) configured to recover a gas discharged from the last-stage vacuum pump of said vacuum pumps for re-use of said gas; wherein said vacuum apparatus further comprises a gas recovery compressor (27), connected to a discharge port of said last-stage vacuum pump without divergence, wherein said compressor is configured to aspirate all of gases from the last-stage vacuum pump and assist a depressurization operation of said last-stage vacuum pump and suppressing back diffusion from said discharge port, and said gas recovery compressor serves as said gas recovery apparatus (Fig. 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akutsu (JP2002039061A), Conrad (US 7,033,142) or Gebele (US 5,228,838) in view of Maruyama (JP09321021), Puech (US 6,644,931) or Smith (US 5,925,167).

Claims 4, 9 and 12: Akutsu, Conrad or Gebele disclose the limitations of claims 1, 7 or 10, respectively. Akutsu, Conrad or Gebele do not disclose a gas recovery apparatus configured to recover a gas discharged from said last-stage vacuum pump. Maruyama teaches a gas recovery apparatus (Drawing 5, 54 or 55; Drawing 1, 4, 5 or 10; Examiner notes that pump 4 or 54 could broadly be interpreted to be a gas recovery apparatus). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ a gas recovery apparatus as taught by Maruyama into the apparatus of Akutsu in order to separate out unnecessary byproducts from the exhaust air. Alternatively, Puech teaches a gas recycling apparatus (10) at the terminal end of the main and auxiliary pumps, 1 and 6, respectively. Independent of these, pumps, Puech teaches that this recycling system "generates a recycled gas flow...directed via a recycling pipe to a controlled gas supply" (col. 5, lines 16-18). Such "generation" would necessarily come by way of an additional

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pump or compressor within the gas recycling apparatus. It follows, then, that it would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ a gas recovery system as taught by Puech into the apparatus of Akutsu in order to recycle gases. As a further alternative, Smith teaches a gas recovery apparatus (27 or 28). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ a gas recovery apparatus as taught by Smith into the apparatus of Akutsu in order to

Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over anticipated over Smith (US 5,925,167).

Claim 5: Smith discloses a vacuum apparatus comprising a vacuum container to be depressurized having a gas inlet and a gas outlet (Fig. 2, 10-13); a high vacuum pump (14-17) connected to said gas outlet of said vacuum container, wherein said high vacuum pump is configured to operate in a molecular flow region and depressurize the inside of said vacuum container or maintain the inside of said vacuum container in a depressurized state; vacuum pumps of a plurality of stages (18-21) connected to said high vacuum pump (but exhausted through pathway D). Smith also discloses a gas recovery apparatus (col. 5, lines 15-20, "treated") configured to recover a gas discharged from the last-stage vacuum pump of said vacuum pumps. By way of pathway D, Smith does not disclose a gas recovery compressor. Nevertheless, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ a gas recovery compressor disclosed in the same Figure 2 (27) to improve the exit flow of the exhaust gases.

Claim 6: Smith further discloses a vacuum apparatus according to claim 5, wherein a supply amount of a gas introduced into said container is smaller than a predetermined amount (Examiner notes that such an event occurs at the immediate start of the introduction of gas into the container), and said last-stage vacuum pump is omitted (adjusting the valve at 22-25), wherein a gas recovery compressor is connected to a discharge port of said vacuum pump at the stage prior to the last stage without divergence (Fig. 2, the gas recovery apparatus is connected to prior stages in pumps 18-21), and wherein a gas discharged from the vacuum pump at the prior stage is recovered and reused by said gas recovery compressor.

Response to Arguments

Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN ZOLLINGER whose telephone number is 571-270-7815. The examiner can normally be reached on Monday - Thursday, 9 a.m. - 4 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art
Unit 3746

/N. Z./

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